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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,571	08/26/2003	Mengtao Pete He	15730.0800	4102

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EXAMINER

WALBERG, TERESA J

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,571

Applicant(s)

HE ET AL.

Examiner

Teresa J. Walberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/14/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the present drawings contain hand written numerals in some Figures. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

The application as filed contained no claim numbered 11.

Misnumbered claims 12-20 have been renumbered as 11-19.

3. In claim 13 (formerly 14) it appears that "I" should be "U", since applicant is using U to represent current in the formula. Appropriate correction is required.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4-6, and 18 (formerly 19) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sundberg et al (6,141,496) in view of Kelly (6,254,011).

Sundberg et al disclose (see Figs. 4 and 5) a controllable heating apparatus for use in a vapor dispensing device including a heating element (76), a voltage source (Fig. 5) coupled to the heating element (76), a variable resistor (75) coupled to the heating element (76) and the voltage source, the variable resistor (75) including a fixed resistive element and a moveable element (57), the heating element (76) having a dissipated power that is related to the position of the moveable element.

Sundberg et al do not disclose that the variable resistor is non-linear.

Kelly teaches using a non-linear variable resistor to compensate for non-linearities in a heating system. See abstract.

It would have been obvious in view of Kelly to make the variable resistor of Sundberg et al non-linear to enable compensating for non-linearities in the heating system of Sundberg.

6. Claims 2, 3, 7, 8, and 19 (formerly 20) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sundberg et al (6,141,496) in view of Kelly (6,254,011) as applied to claims 1, 4-6, and 19 above and further in view of Fujii et al (3,564,475).

Sundberg et al in view of Kelly, as discussed above, disclose the claimed structure with the exception of the heater and the resistors being thin film resistors, and the resistor varying due to differences in width or thickness.

Fujii et al disclose that it is conventional in the art to make resistive elements as thin films.

It would have been obvious in view of Fujii et al to make the heating resistor and the control resistor of Sundberg et al in view of Kelly as thin films, the motivation being ease of manufacture.

Fujii et al further disclose that it is known in the art to vary the width and thickness of a variable resistor to obtain a non-linear function.

It would have been obvious in view of Fujii et al to make the non-linear resistor of Sundberg et al in view of Kelly by varying its width or thickness, the motivation being to more easily control the resistor characteristics.

7. Claims 9, 10, and 11-17 (formerly 12-18) are rejected under 103(a) as being unpatentable over Sundberg et al (6,141,496) in view of Kelly (6,254,011) and Fujii et al (3,564,475) as applied to claims 2, 3, 7, 8, and 19 (formerly 20) above and further in view of Ginn (4,435,691).

Sundberg et al in view of Kelly and Fujii et al disclose the claimed structure with the exception of parallel first and second resistive elements.

Ginn teaches using first and second resistive elements (12 and 14) in a variable resistor and states that this structure enables the resistor to have non-linear outputs such as logarithmic curves.

It would have been obvious in view of Ginn to use first and second resistive elements in the heater control of Sundberg et al in view of Kelly and Fujii et al to more easily determine the characteristics of the variable resistor.

With respect to claim 12 (formerly 13), Sundberg et al discloses high, low, and intermediate settings for the variable resistor.

With respect to claims 13, 14, 16, and 17 (formerly 14, 15, 17, and 18), the listed formulas appear to reflect the inherent properties of resistors having the claimed structure.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hornung teaches that it is known to use non-linear potentiometers to compensate for non-linear thermistors.

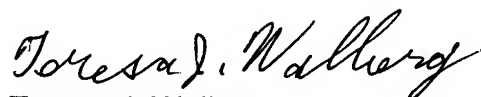
May, Wright, Gramm, Kiyono et al, Carter, Ohtani et al, Maisch, and Slenker are cited to show non-linear variable resistors.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 703-308-1327. The examiner can normally be reached on M-F 9:00 - 5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 703-305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Teresa J. Walberg
Primary Examiner
Art Unit 3742

tjw